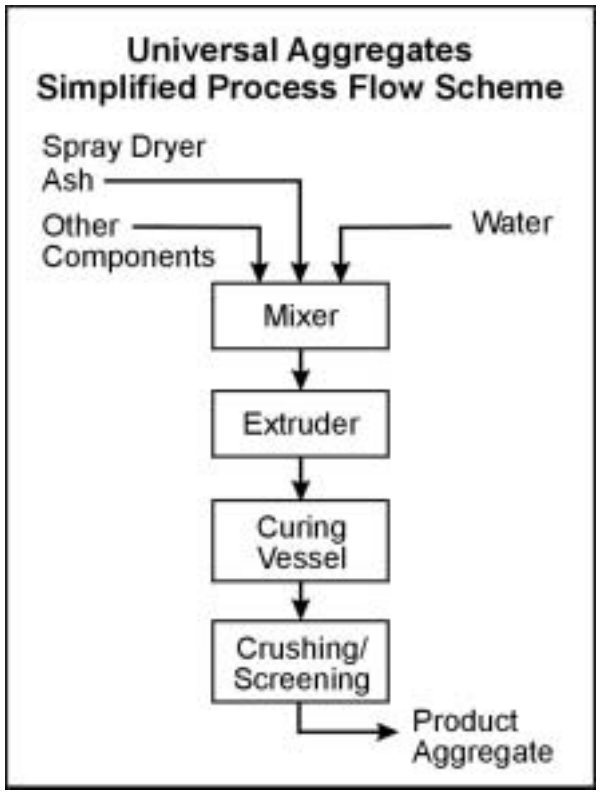
# Universal Aggregates, LLC

- An aggregate manufacturing process on a 250 MW coal-fired facility.
- Demonstrates a new recycling technology for spray dryer waste.
- Total Project funding: $19.6 million ($7.2 million DOE).




**250 MW Birchwood Power Partners**

## A PPII Clean Coal Project

# Background

- **Universal Aggregates, LLC will demonstrate that a waste material with no beneficial purpose can be turned into useful products.**
  - 115,000 tons spray dryer by-product into 167,000 tons lightweight aggregate annually.

- **Project Location:**
  - Birchwood Power Partners, King George County, VA

- **Team Members**
  - SynAggs, Inc.

# Background

- **Aggregate from process can be used to make a variety of construction materials.**
  - Masonry blocks
  - Lightweight concrete
  - Asphalt paving material

- **There are currently 21 spray dryer units producing this difficult-to-use waste material.**

- **Multi-pollutant legislation, if enacted, will lead to installation of more spray dryers.**

# Technology Uniqueness

- The Universal Aggregate process can recycle waste from either wet or dry scrubbers.
- This technology offers an alternative to disposing of spray dryer waste by landfilling.
- Manufactured aggregate concrete blocks meet or exceed ASTM specifications for commercial construction-grade products, including compressive strength.
- Technology can be used in areas with high construction material demand but limited access to natural aggregate.

# Schedule

- **Project Start**
  - November 2002
- **NEPA Process**
  - Completed October 2002
- **Testing**
  - Shakedown started: February 2004
  - Full-Scale Operation: May 2004 – May 2005
- **Project Completion**
  - May 2005

# Potential Benefits

**This technology**

- **Lowers waste by-product disposal cost.**
- **Reduces environmental impact.**
  - Lowers landfilling liability
  - Less scrubber sludge to landfill
  - Less aggregate rock to mine
- **Produces aggregate that meets or exceeds ASTM specifications for construction materials.**
- **Enables sales of former waste sludge.**
- **Reduces cost of consumer electric bills.**
- **Commercial application could transform ~25 million tons of spray dryer waste into useful aggregate.**

**Birchwood Power Facility Storage Silo for Spray Dryer By-product**